Complete Summary

GUIDELINE TITLE

Treatment of acute nonvariceal gastrointestinal tract bleeding.

BIBLIOGRAPHIC SOURCE(S)

Millward SF, Bakal CW, Weintraub JL, Bass JC, Brown DB, Dickey KW, Gemery JM, Klyde DP, Patel AA, Saleem R, Selby JB Jr, Silberzweig JE, Greene FL, Rockey DC, Expert Panel on Interventional Radiology. Treatment of acute nonvariceal gastrointestinal tract bleeding. [online publication]. Reston (VA): American College of Radiology (ACR); 2006. 6 p. [16 references]

GUIDELINE STATUS

This is the current release of the guideline.

The appropriateness criteria are reviewed annually and updated by the panels as needed, depending on introduction of new and highly significant scientific evidence.

COMPLETE SUMMARY CONTENT

SCOPE
METHODOLOGY - including Rating Scheme and Cost Analysis
RECOMMENDATIONS
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BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS
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SCOPE

DISEASE/CONDITION(S)

Acute nonvariceal gastrointestinal (GI) tract bleeding

Note: Varices are also an important cause of upper GI (UGI) bleeding. However, since these involve the diagnosis and management of portal hypertension, variceal bleeding will not be described in this document.

GUIDELINE CATEGORY

Diagnosis
Management
Treatment

CLINICAL SPECIALTY

Emergency Medicine
Family Practice
Gastroenterology
Internal Medicine
Radiology
Surgery

INTENDED USERS

Health Plans
Hospitals
Managed Care Organizations
Physicians
Utilization Management

GUIDELINE OBJECTIVE(S)

To evaluate the appropriateness of radiologic and other procedures for diagnosis and treatment of patients with acute nonvariceal gastrointestinal (GI) tract bleeding

TARGET POPULATION

Patients with acute nonvariceal gastrointestinal (GI) tract bleeding

INTERVENTIONS AND PRACTICES CONSIDERED

Diagnosis/Treatment

1. Diagnostic and therapeutic endoscopy (for upper gastrointestinal [GI] bleeding)
2. Diagnostic and therapeutic colonoscopy (for lower GI bleeding)
3. Transcatheter arteriography/intervention (TAI)
4. Surgery
5. Computed tomography (CT), abdomen
6. Nuclear medicine scan
7. Magnetic resonance imaging (MRI), abdomen
8. Embolization

MAJOR OUTCOMES CONSIDERED

- Utility of diagnostic procedures in identifying the source of bleeding
- Effectiveness of treatment (surgery vs. transcatheter arteriography/intervention)
- Mortality and recurrent bleeding rates

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The guideline developer performed literature searches of peer-reviewed medical journals and the major applicable articles were identified and collected.

NUMBER OF SOURCE DOCUMENTS

The total number of source documents identified as the result of the literature search is not known.

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Not Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not stated

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

One or two topic leaders within a panel assume the responsibility of developing an evidence table for each clinical condition, based on analysis of the current literature. These tables serve as a basis for developing a narrative specific to each clinical condition.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Delphi)

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Since data available from existing scientific studies are usually insufficient for meta-analysis, broad-based consensus techniques are needed for reaching agreement in the formulation of the appropriateness criteria. The American College of Radiology (ACR) Appropriateness Criteria panels use a modified Delphi technique to arrive at consensus. Serial surveys are conducted by distributing questionnaires to consolidate expert opinions within each panel. These

questionnaires are distributed to the participants along with the evidence table and narrative as developed by the topic leader(s). Questionnaires are completed by participants in their own professional setting without influence of the other members. Voting is conducted using a scoring system from 1-9, indicating the least to the most appropriate imaging examination or therapeutic procedure. The survey results are collected, tabulated in anonymous fashion, and redistributed after each round. A maximum of three rounds is conducted and opinions are unified to the highest degree possible. Eighty percent agreement is considered a consensus. This modified Delphi technique enables individual, unbiased expression, is economical, easy to understand, and relatively simple to conduct.

If consensus cannot be reached by the Delphi technique, the panel is convened and group consensus techniques are utilized. The strengths and weaknesses of each test or procedure are discussed and consensus reached whenever possible. If "No consensus" appears in the rating column, reasons for this decision are added to the comment sections.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Criteria developed by the Expert Panels are reviewed by the American College of Radiology (ACR) Committee on Appropriateness Criteria.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

ACR Appropriateness Criteria®

Clinical Condition: Treatment of Acute Nonvariceal Gastrointestinal Tract Bleeding

Summary of Recommendations

Upper GI Bleeding:

- Endoscopy is the best initial diagnostic and therapeutic procedure.

- Surgery and transcatheter arteriography/intervention (TAI) are equally effective following failed therapeutic endoscopy, but TAI should be considered particularly in patients at high-risk for surgery.
- TAI is less likely to be successful in patients with impaired coagulation.
- TAI is the best technique for treatment of bleeding into the biliary tree or pancreatic duct.

Lower GI Bleeding:

- For diagnosis of the cause of colonic bleeding urgent colonoscopy is the most effective technique.
- Arteriography is most likely to demonstrate the site of bleeding (and guide therapeutic embolization) in hemodynamically unstable patients, or those who have required transfusion of greater than 5 units of blood.
- TAI is more effective for the treatment of diverticular bleeding than for bleeding from other causes, and is more effective for lesions distal to the cecum, compared to lesions involving the cecum, ileum, or jejunum.
- Recurrence of bleeding following technically successful TAI may occur in 14 to 65% of patients.
- Symptomatic bowel ischemia following TAI is uncommon.

Many of the diagnostic, surgical, and interventional procedures described here are highly specialized. Their availability and utility vary by institutional and operator experience.

Variant 1: Upper GI tract bleeding suspected based on clinical exam and NG tube aspirate. Active hematemesis and/or melena. Next procedure/intervention.

Treatment/Procedure	Appropriateness Rating	Comments
Diagnostic/therapeutic endoscopy	9	
Transcatheter arteriography/intervention (TAI)	5	Embolization particularly useful for poor surgical candidates.
Surgery	4	
CT, abdomen	3	
Nuclear medicine scan	2	
MRI, abdomen	1	
Appropriateness Criteria Scale **1 2 3 4 5 6 7 8 9** **1 = Least appropriate 9 = Most appropriate**		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 2: Upper GI tract bleeding. Endoscopy localized the bleeding site. Ongoing or recurrent bleeding. Next procedure/intervention.

Treatment/Procedure	Appropriateness Rating	Comments
Diagnostic/therapeutic endoscopy (repeat)	7	If there is a reasonable likelihood that patient will respond to a second attempt at therapeutic endoscopy.
Surgery	7	
Transcatheter arteriography/intervention (TAI)	7	Embolization particularly useful for poor surgical candidates.
Nuclear medicine scan	2	
CT, abdomen	2	
MRI, abdomen	1	
Appropriateness Criteria Scale **1 2 3 4 5 6 7 8 9** **1 = Least appropriate 9 = Most appropriate**		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 3: Upper GI tract bleeding. Active bleeding from the biliary tract or pancreatic duct, confirmed by endoscopy. Next procedure/intervention.

Treatment/Procedure	Appropriateness Rating	Comments
Transcatheter arteriography/intervention (TAI)	8	Particularly if vascular etiology is suspected.
CT, abdomen	6	Most appropriate in certain clinical circumstances (e.g., likely pseudoaneurysm).
Surgery	4	
Diagnostic/therapeutic endoscopy (repeat)	3	
MRI, abdomen	3	

Treatment/Procedure	Appropriateness Rating	Comments
Nuclear medicine scan	1	
Appropriateness Criteria Scale **1 2 3 4 5 6 7 8 9** **1 = Least appropriate 9 = Most appropriate**		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 4: Lower GI tract bleeding. Active bleeding with hematochezia or melena in a hemodynamically stable patient. Next procedure/intervention.

Treatment/Procedure	Appropriateness Rating	Comments
Diagnostic/therapeutic colonoscopy	8	Use of colonoscopy or nuclear medicine depends on local expertise and experience.
Nuclear medicine scan	8	Use of colonoscopy or nuclear medicine depends on local expertise and experience.
Transcatheter arteriography/intervention (TAI)	5	Embolization if arteriogram positive.
CT, abdomen	4	CTA is an emerging technology that may become increasingly more appropriate.
Surgery	3	
MRI, abdomen	1	
Appropriateness Criteria Scale **1 2 3 4 5 6 7 8 9** **1 = Least appropriate 9 = Most appropriate**		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 5: Lower GI tract bleeding. Active bleeding in a hemodynamically unstable patient or a patient who has required more than 5 units of blood. Next procedure/intervention.

Treatment/Procedure	Appropriateness Rating	Comments
Transcatheter arteriography/intervention (TAI)	8	Embolization if arteriogram positive.
Diagnostic/therapeutic colonoscopy	6	Less appropriate in hemodynamically unstable patients.
Surgery	6	More appropriate when the bleeding site has been localized.
Nuclear medicine scan	6	More appropriate in the hemodynamically stable patient.
CT, abdomen	3	CTA is an emerging technology that may become increasingly more appropriate.
MRI, abdomen	1	
Appropriateness Criteria Scale **1 2 3 4 5 6 7 8 9** **1 = Least appropriate 9 = Most appropriate**		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 6: Lower GI tract bleeding. Colonoscopy localized the bleeding site. Ongoing or recurrent bleeding. Next procedure/intervention.

Treatment/Procedure	Appropriateness Rating	Comments
Transcatheter arteriography/intervention (TAI)	8	Embolization if arteriogram positive.
Surgery	7	Most appropriate when the site of bleeding has been localized.
Diagnostic/therapeutic colonoscopy	5	If there is a reasonable likelihood that patient will respond to a second attempt at therapeutic colonoscopy.
Nuclear medicine scan	2	
CT, abdomen	2	
MRI, abdomen	1	
Appropriateness Criteria Scale		

Treatment/Procedure	Appropriateness Rating	Comments
1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Summary of Literature Review

Acute gastrointestinal (GI) tract bleeding remains a major cause of morbidity and mortality despite advances in management. The mortality rate is around 10%, but increases to up to 40% in cases of massive bleeding associated with hemodynamic instability or the requirement for transfusion of more than four units of blood.

Part 1: Upper Gastrointestinal Tract

Bleeding from the esophagus, stomach, or upper small bowel proximal to the ligament of Treitz is termed upper gastrointestinal (UGI) tract bleeding. It presents with hematemesis and/or melena, but may sometimes cause bright red hematochezia in cases with severe bleeding. Causes of UGI bleeding include duodenal and gastric ulcers, gastric erosions, Mallory-Weiss tears, esophagitis, duodenitis, neoplasms, esophageal ulcers, stomal ulcers, and vascular malformations. Varices are also an important cause of UGI bleeding. However, since these involve the diagnosis and management of portal hypertension, variceal bleeding will not be described in this document.

Patients with acute GI bleeding should initially be managed with restoration of intravascular volume. Insertion of a nasogastric tube and aspiration of gastric contents can be used to help determine if the source is the UGI tract. UGI endoscopy is the best initial method for both the diagnosis and treatment of UGI bleeding: the source of bleeding is identified in 95% of cases, and endoscopic treatment is effective in 80% to 90% of patients.

Management options for patients with acute nonvariceal UGI bleeding that fails to stop with endoscopic treatment include repeat endoscopy, emergency surgery and transcatheter arteriography followed by transcatheter intervention (usually embolization). Surgery and transcatheter arteriography/intervention (TAI) are both equally effective in treating patients with acute nonvariceal UGI bleeding that fails to respond to endoscopic treatment. In a comparative study of 70 patients, mortality rates and recurrent bleeding rates were similar for both surgery and TAI, despite more advanced age and greater prevalence of heart disease in those receiving TAI. Failure of TAI to control bleeding is more likely in patients with coagulation disorders, or multiorgan failure and in cases of technically inadequate TAI.

Diagnostic arteriography is done prior to embolization. Generally, positive findings at arteriography (contrast extravasation) are required in order to direct embolization. However, with UGI bleeding, embolization directed by endoscopic

findings alone (with no extravasation seen with diagnostic arteriography) is also effective.

Complication rates with TAI, including ischemia of the embolized organ, are low, and prolonged clinical success can be expected in at least 65% of patients.

There is no large randomized trial on which to base recommendations, so the choice of either surgery or TAI for patients with acute, nonvariceal UGI bleeding that fails to respond to endoscopic therapy must be based on local experience and expertise. However, TAI should be considered, particularly in patients at high risk for surgery. TAI should also be strongly considered in those rare instances where acute UGI bleeding occurs from the pancreatic or bile ducts.

Part 2: Low Gastrointestinal Tract

Acute lower gastrointestinal (LGI) tract bleeding is defined as bleeding into the small bowel distal to the ligament of Treitz, or bleeding into the large bowel. It may present as either melena or hematochezia, depending on the site. Causes of LGI bleeding include inflammatory bowel disease, neoplasms, stress ulcers, surgical anastomoses, vascular lesions such as angiodysplasia, and diverticulitis.

There is considerable controversy in regard to the best modality for the initial diagnosis of the cause of LGI bleeding. Radiological tests that can be used include radionuclide scans, contrast enhanced computed tomography (CT) scans, and transcatheter arteriography. Radionuclide scans are more sensitive than arteriography for detecting lower rates of bleeding (approximately 0.05 to 0.1 mL/min, compared to 0.5 mL/min), but radionuclide scans provide less precise anatomic localization of the site of bleeding. CT scanning is emerging as a new technique for localization of bleeding, although there are little current data regarding use of CT for GI bleeding.

Urgent colonoscopy can be used for both the diagnosis and treatment of LGI bleeding. A randomized, controlled trial of urgent colonoscopy compared to standard care was performed in 100 patients with acute LGI bleeding. Although there was no difference in outcomes, colonoscopy identified the cause of bleeding more often than standard care.

Transcatheter arteriography is more likely to identify the source of LGI bleeding in patients who have massive bleeding resulting in either hemodynamic instability or requirement for greater than five units of blood transfusion. Demonstration of the site of bleeding at arteriography enables the possibility of treatment with TAI. Success rates of TAI for first-line therapy for LGI bleeding range from 40% to 85% depending on the cause of bleeding. Technically successful TAI could be performed in approximately 73% of patients in one series. Asymptomatic ischemia of the embolized bowel can occur, but ischemia that requires treatment is uncommon.

Technically successful TAI will usually result in initial hemostasis, but rebleeding rates of 22% to 56% have been reported. However, in some series TAI has provided definitive treatment for 81% to 86% of patients. TAI may be most effective for bleeding from colonic diverticulitis, and where bleeding is occurring from the large bowel distal to the cecum.

No large prospective, randomized trials have been conducted to compare TAI with surgery for LGI bleeding. However, TAI can be performed at the time of diagnostic arteriography. Consequently, use of TAI in patients with acute LGI bleeding, where active contrast extravasation is seen during diagnostic arteriography, appears to be a safe and relatively effective treatment that should be considered, depending on local experience and expertise.

Abbreviations

- CT, computed tomography
- CTA, computed tomographic angiography
- GI, gastrointestinal
- MRI, magnetic resonance imaging
- NG, nasogastric

CLINICAL ALGORITHM(S)

Algorithms were not developed from criteria guidelines.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The recommendations are based on analysis of the current literature and expert panel consensus.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Selection of appropriate radiologic and other procedures for diagnosis and treatment of patients with acute nonvariceal gastrointestinal bleeding

POTENTIAL HARMS

Complication rates of transcatheter arteriography/intervention (TAI), including ischemia of the embolized organ, are low. Asymptomatic ischemia of the embolized bowel can occur, but ischemia that requires treatment is uncommon.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

An American College of Radiology (ACR) Committee on Appropriateness Criteria and its expert panels have developed criteria for determining appropriate imaging examinations for diagnosis and treatment of specified medical condition(s). These criteria are intended to guide radiologists, radiation oncologists, and referring physicians in making decisions regarding radiologic imaging and treatment. Generally, the complexity and severity of a patient's clinical condition should

dictate the selection of appropriate imaging procedures or treatments. Only those exams generally used for evaluation of the patient's condition are ranked. Other imaging studies necessary to evaluate other co-existent diseases or other medical consequences of this condition are not considered in this document. The availability of equipment or personnel may influence the selection of appropriate imaging procedures or treatments. Imaging techniques classified as investigational by the U.S. Food and Drug Administration (FDA) have not been considered in developing these criteria; however, study of new equipment and applications should be encouraged. The ultimate decision regarding the appropriateness of any specific radiologic examination or treatment must be made by the referring physician and radiologist in light of all the circumstances presented in an individual examination.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Personal Digital Assistant (PDA) Downloads

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Millward SF, Bakal CW, Weintraub JL, Bass JC, Brown DB, Dickey KW, Gemery JM, Klyde DP, Patel AA, Saleem R, Selby JB Jr, Silberzweig JE, Greene FL, Rockey DC, Expert Panel on Interventional Radiology. Treatment of acute nonvariceal gastrointestinal tract bleeding. [online publication]. Reston (VA): American College of Radiology (ACR); 2006. 6 p. [16 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2006

GUIDELINE DEVELOPER(S)

American College of Radiology - Medical Specialty Society

SOURCE(S) OF FUNDING

The American College of Radiology (ACR) provided the funding and the resources for these ACR Appropriateness Criteria®.

GUIDELINE COMMITTEE

Committee on Appropriateness Criteria, Expert Panel on Interventional Radiology

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

The appropriateness criteria are reviewed annually and updated by the panels as needed, depending on introduction of new and highly significant scientific evidence.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the American College of Radiology (ACR) Web site.

ACR Appropriateness Criteria® *Anytime*, *Anywhere*™ (PDA application). Available from the ACR Web site.

Print copies: Available from the American College of Radiology, 1891 Preston White Drive, Reston, VA 20191. Telephone: (703) 648-8900.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- ACR Appropriateness Criteria®. Background and development. Reston (VA): American College of Radiology; 2 p. Electronic copies: Available in Portable Document Format (PDF) from the American College of Radiology (ACR) Web site.

PATIENT RESOURCES

None available

NGC STATUS

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